

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE GENERAL SPECIFICATIONS**

**DRY HYDRANT**

(no.)  
CODE 432

**SCOPE**

*The work shall consist of constructing a dry hydrant and includes all clearing, excavation, backfill, and installation of materials to the lines, grades, and elevations as shown on the drawings and as staked in the field.*

**LOCATION**

*The location of the dry hydrant shall be as shown on furnished drawings or as staked in the field.*

**PUBLIC AND PRIVATE UTILITIES**

*Utilities are defined to be overhead and underground power or communication lines, and pipelines. All utilities discovered to be in the work area are shown on the drawings or sketches. However, the absence of indicators on the drawings or sketches does not assure the nonexistence of utilities in the work area. The contractor is alerted to conduct his/her own search and discovery for utilities in order to lessen or avoid potential damages. The owner/operator shall complete TX-ENG-80, UTILITIES INVENTORY prior to layout or any ground disturbance and return it to an NRCS representative.*

**MATERIALS**

*Materials required for dry hydrants shall be as specified on the drawings or in the Construction Detail section of this specification.*

*Pipe shall meet the following requirements:*

*a. Steel pipe shall be standard weight and shall meet the requirements of ASTM Specification A-53. Steel pipe and fittings shall be zinc-coated (galvanized) in accordance with ASTM A-53.*

*Used steel pipe may be installed provided it is approved by an authorized NRCS representative as being essentially equal in quality to new pipe.*

*b. Plastic pipe shall be PVC Schedule 40 or SDR-26 or stronger, and shall meet the requirements of ASTM Specification D-1785 or D-2241. Plastic pipe exposed to sunlight shall be painted or otherwise protected from ultraviolet rays.*

*Plastic pipe shall be marked in accordance with the above standards or ASTM Specifications and shall include the following:*

*(1) Nominal pipe size; e.g., 6 "*

*(2) Type of plastic pipe material in accordance with Standard Thermo-plastic Pipe Materials Designation Code; e.g., PVC 1120.*

Conservation practice general specifications are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.
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- (3) Pressure rating in psi; e.g., 160 psi.*
- (4) SDR or Schedule number; e.g., SDR-26 or Sch. 40.*
- (5) Standard or ASTM designation with which the pipe complies; e.g., ASTM D-2241.*
- (6) Manufacturer's name or trademark.*

*All PVC pipe and fittings exposed to sunlight shall be primed and painted with a high-grade epoxy paint.*

*Watertight joints having a strength equal to that of the pipe shall be used. Couplers must be of similar material or completely insulated. Manufacturer's installation specifications shall be followed.*

*The dry hydrant assembly and all accessories shall meet the requirements of the local fire department. Installation shall conform to the manufacturer's recommendations.*

*The intake screen shall be constructed of plastic or steel, or other acceptable material as specified under "Pipe". It may be constructed by boring holes in the pipe. Maximum diameter of the holes should not exceed 3/8". The total cross sectional area of the holes shall equal or exceed 4 times the cross sectional flow area of the pipe. The end of the screen shall be capped to prevent entry of debris.*

*The under water support shall be constructed of concrete or non-corrosive metal. It shall be of sufficient design to support and stabilize the strainer inlet and to provide ease of adjustment.*

*Dry hydrant couplers shall be compatible with local fire department equipment.*

## **CONTROL OF WATER**

*Control or removal of surface or groundwater shall be performed as needed to complete the required construction in accordance with specifications and drawings.*

## **SITE PREPARATION**

*The dry hydrant access area and pipe location shall be cleared to the extent needed for pipe installation. Clearing and brush removal for safe, line-of-site to the road shall be included. Debris, logs, stumps, and other material resulting from the clearing operation shall be burned, buried, removed from the site, or otherwise disposed of in a manner the construction that does not interfere with pipe installation or vehicle access. Fences encountered within area shall be salvaged and replaced.*

## **EXCAVATION**

*Excavation for placement of the dry hydrant pipe and riser shall be done by trenching or other approved methods. Excavation should begin in the pond and proceed toward the hydrant location. Care must be taken during underwater excavation to avoid ridges and valleys in the bottom grade of the trench. The bottom grade shall have a positive slope toward the water source.*

*Provisions shall be made to insure safe working conditions where unstable soil, trench depth, water, or other conditions can be hazardous to personnel at the job site. If excavations of 5 feet depth or greater are required, the sides of the trench shall be sloped to a stable slope above the 3.5 foot level to avoid side wall caving.*

*Excavation and shaping that will facilitate and enhance easy on/off road access to the dry hydrant shall be done. Such excavation and shaping shall provide a nearly level, well-drained site which will also facilitate operation and maintenance activities.*

## **FILL PLACEMENT**

*If suitable, the material excavated from the pipe trench may be used for pipe backfill. If unsuitable material is encountered during trenching, acceptable backfill shall be obtained from other sources. Material used for backfill for the pipe shall be free from stones over two inches in diameter, or other sharp-edged material that may damage the pipe. Loose, sandy material should be used for backfill until the pipe is covered. After covering the pipe, other excavated material may be used to complete the backfill of the trench.*

*A minimum of 2 feet of cover over the pipe is required. The soil backfill shall be mounded over the pipe for settlement and to divert surface water.*

*Backfill material shall be placed in layers not exceeding nine inches thick and compacted. Compaction around the pipe above the water level shall be by hand tamping, manually directed power tampers, or other approved methods. Compaction below the water level shall proceed from the hydrant end and shall be done by soil weight and compaction on the material above the water level. Trench confinement and compaction will force excess water from the fill material. Care must be taken so that loose soil in the water will not be pushed out over the intake screen.*

## **ACCESS**

*Vehicle access to and from the dry hydrant shall be provided for fire truck and pumper units. The access road shall have an all-weather surface (gravel and blacktop), shall be level near the hydrant and well drained, and shall be at least 12 feet wide for ease of movement by personnel and equipment during an emergency. When public roads are used for access, an all-weather road surface adjacent to the dry hydrant and completely off the public road is recommended for safety of emergency personnel and the public.*

## **TESTING**

*The fire department shall run a pump test at the design capacity to confirm satisfactory operation of the installation after the pipe has been backfilled and glue joints have sufficiently cured (24 hours minimum).*

## **MARKINGS**

*The dry hydrant shall be clearly marked with appropriate signs acceptable to the local fire department. Use of reflective paint on signs and connection cap will help improve visibility*

*during emergencies. Guard posts, guard rails, or other physical barriers shall be installed if needed to protect the above ground pipe system.*

## **VEGETATION**

*After the dry hydrant installation, the site shall be graded for surface drainage. All disturbed areas (except the road surface) shall be fertilized and seeded for establishment of vegetation.*

*To protect from fires, it is recommended that all vegetation be controlled within 5 feet of the dry hydrant riser.*

## **OPERATION AND MAINTENANCE**

*Mowing of the dry hydrant access area shall be performed as necessary to keep the area readily available for emergency use. Aquatic vegetation shall be controlled to prevent clogging of the intake screen. Pump testing of the dry hydrant shall be done at least annually to verify site usability. In-water checks of the intake screen should be made once every five years to determine its condition. The hydrant should be back flushed periodically to remove any silt or debris that may have accumulated on the screen.*

## **MEASUREMENT AND PAYMENT**

*No measurement of quantities shall be made during construction installation. Design quantities listed in the "Bill of Materials" on the drawings shall provide the basis for payment.*

*Payment for the work will be "lump sum" for each site based on quantities shown in the "Bill of Materials" and individual site conditions.*

## **CONSTRUCTION DETAILS**

*The following listed drawings are attached and are a part of these Construction Specifications: (Include other applicable items - mark out and initial items listed and not applicable.)*

- a. TX-ENG-77- Construction Data For Pond Dry Hydrant.*
- b. Dry Hydrant Design, Installation, and Certification Datasheet found in Texas Engineering Technical Note, 210-11-TX1, "Planning and Design of Dry Hydrants".*
- c. Bill of Materials for Dry Hydrant Installation - sample found in Texas Engineering Technical Note, 210-11-TX1, "Planning and Design of Dry Hydrants".*